Integrin αvβ8 and its latent transforming growth factor β1 (TGFβ1) protein ligand have central roles in promoting niche co-option and GBM initiation. αvβ8 integrin is highly expressed in GSCs and is essential for self-renewal and lineage commitment in vitro. Fractionation of β8high cells from freshly resected human GBM samples also reveals a requirement for this integrin in tumorigenesis in vivo. Whole-transcriptome sequencing reveals that αvβ8 integrin regulates tumor development, in part, by driving TGFβ1-induced DNA replication and mitotic checkpoint progression. Collectively, these data identify the αvβ8 integrin-TGFβ1 signaling axis as crucial for exploitation of the perivascular niche and identify potential therapeutic targets for inhibiting tumor growth and progression in patients with GBM [1].

Silencing β8 integrin in human GBM cells leads to impaired tumor cell invasion due to hyperactivation of the Rho GTPases Rac1 and Cdc42. β8 integrin coimmunoprecipitates with Rho-GDP dissociation inhibitor 1 (RhoGDI1), an intracellular signaling effector that sequesters Rho GTPases in their inactive GDP-bound states. Silencing RhoGDI1 expression or uncoupling integrin αvβ8-RhoGDI1 protein interactions blocks GBM cell invasion due to Rho GTPase hyperactivation. These data reveal for the first time that αvβ8 integrin, via interactions with RhoGDI1, regulates activation of Rho proteins to promote GBM cell invasiveness. Hence targeting the αvβ8 integrin-RhoGDI1 signaling axis might be an effective strategy for blocking GBM cell invasion [2].

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2)
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